''We're still in for a lot of surprises,'' he added.

But more important than merely completing the table of quarks predicted by theory, the top quark may now begin to shed light on a deep philosophical question: everything in the universe, from the most distant galaxy to a rose petal, is made of quarks. Were the masses and other properties of these particles determined by random chance, or by some fundamental unifying plan? If so, what is that plan, and how might gravity, the least understood of the four forces of nature, be related to it?

''This monster, compared with all the other quarks, is like a big cowbird's egg in a nest of little sparrow eggs,'' said Dr. Paul D. Grannis, a leader of the DO group. ''It's so peculiar it must hold clues to some important new physics.''

''The top quark has turned out to be so heavy,'' added Dr. John Peoples, director of Fermilab, ''that it's kind of a laboratory in itself, from which many new experiments will certainly yield important insights.''

It may be, scientists believe, that quarks (and the higher forms of matter they make up) are endowed with mass by interacting with an all-pervading universal ''field,'' with which they communicate through a hypothetical particle called the Higgs boson. To find and measure the Higgs boson would be as exciting for a physicist as the creation of life in a test tube would be for a biologist.

One of the questions high-energy physicists regard as fundamental is whether there is a single type of Higgs boson, or several types. Theory predicts that if it is possible to accurately measure the masses of two known particles—the top quarks and the W particles that transmit the weak nuclear force—it will be possible to determine whether there are one or more than one Higgs bosons.

''We're so elated by the discovery of the top quark that we haven't yet begun to sift all the data,'' said Dr. Boaz Klima of Fermilab, one of the leaders of the successful search. ''But this particle is so astonishingly heavy that its decay may give us hints of a lot of other things, perhaps even of supersymmetric particles.''

The quest for supersymmetric particles by the world's most powerful accelerators during the last decade has failed to turn up any evidence that they exist, but according to some theories, they may be so heavy they are beyond reach of present-day accelerators. If supersymmetric particles could be shown to exist, they might offer scientists a tool for learning how gravity is related to the other forces of nature: the electromagnetic force and the strong and weak nuclear forces.

Even when trillions of protons and antiprotons are made to collide in Fermilab's huge accelerator at combined energies of two trillion electron-volts, the creation of top quarks by the miniature fireballs remains a rare event.

Dr. Grannis of the D0 collaboration said today that his group, which has been running its detector on and off since 1992, has found 17 collisions resulting in evidence of the creation of a top quark. The team was able to calculate the mass of the particle as 199 billion electron-volts, give or take about 30 billion electron-volts. (Particle physicists measure mass in terms of its energy equivalent, because the units are more practical. Einstein's famous equation $E=mc^2$ defines the equivalency of mass and energy.)

For their part, according to Dr. William Carithers Jr., a leader of the rival CDF Collaboration, two separate counting techniques using the CDF detector have turned up a total of about 21 top quark events. The group calculates the mass of the top quark as about 176 billion electron-volts, give or take about 13 billion.

These results, the competing teams say, are in reasonably close agreement. At any rate, they agree that they have found the quark, and that there is only one chance in about one million that the results could have been caused by anything besides the decays of pairs of top and antitop quarks.

One of the main difficulties in identifying the top quark is that it cannot be seen directly. When one is created from the immense pool of energy formed in the collisions of protons and antiprotons accelerated by Fermilab's Tevatron, its lifetime is so brief that no detector could sense it. But the top quark disintegrates into hundreds of daughter particles, which in turn decay into cascades of other particles.

From the patterns of ''jets,'' particle types and other characteristics of these decays, theorists have learned to identify the parent particles like the top quark which cannot be detected directly. A jet is a spray of particles moving in the same general direction away from a collision.

High-energy physics is expensive. The Fermilab Tevatron accelerator, a ring of superconducting magnets four miles in circumference, cost about $250 million to build, and each of the two detectors built into the accelerator cost about $60 million. An upgrade of the Tevatron called a main injector, costing $228 million, is scheduled for completion by 1999.

The Superconducting Supercollider, a project that would have been Fermilab's successor, would have cost more than $8 billion if Congress had not canceled it last year. For the foreseeable future, Fermilab will remain America's most powerful particle accelerator, and scientists say that the machine has at least 15 more years of useful life.

The stakes for the high-energy physics community are enormous, in terms of job security, the risks of failure and the promise of great prestige for leaders of successful experiments. Competition between physicists is often intense and sometimes bitter.

The CDF and D0 detector collaborations have gone to great lengths to avoid even looking at each others' experiments—a policy that persisted even today minutes before their joint seminar began.

''We know that some of the younger physicists on both sides have been exchanging pirated copies of our reports, but we've tried to suppress such exchanges,'' one physicist said. ''Of course there is friction, but that's a healthy aspect of science. This way, we know that our results are in no way influenced by those of our competitors, and when both our versions of the top quark are published side by side, scientists will be able to judge for themselves.''

Despite a joking undertone of bickering between the two collaborations, which include scientists from a dozen nations, a holiday mood today eclipsed old rivalries and the collective anxiety about future financing of high-energy physics.

''We're ecstatic about this discovery,'' Dr. Peoples said. ''Non-scientists often ask me what the point of all this may be. I say it's important because it makes the universe knowable, in the same sense that our discovery of DNA has made the nature of life knowable. We have a long, long way to go, but it's one of the most intellectually satisfying pursuits there is.''●

HOMICIDES BY GUNSHOT IN NEW YORK CITY

● Mr. MOYNIHAN. Mr. President, I rise today, as I have done each week of the 104th Congress, to announce to the Senate that during the past week, 13 people were murdered by gunshot in New York City, bringing this year's total to 120.●

MEASURE READ FOR THE FIRST TIME—H.R. 956

Mr. DOLE. Mr. President, I inquire of the Chair if H.R. 956 has arrived from the House of Representatives.

The PRESIDING OFFICER. The Senator is correct.

Mr. DOLE. Therefore, I ask for its first reading.

The PRESIDING OFFICER. The clerk will read the bill for the first time.

The legislative clerk read as follows:

A bill (H.R. 956) to establish legal standards and procedures for product liability litigation, and for other purposes.

Mr. DOLE. Mr. President, I now ask for its second reading.

Mr. GLENN. Mr. President, I object.

The PRESIDING OFFICER. Objection is heard. The bill will be read for the second time on the next legislative day.

ORDERS FOR WEDNESDAY, MARCH 15, 1995

Mr. DOLE. Mr. President, I ask unanimous consent that when the Senate completes its business today, it stand in adjournment until the hour of 9:30 a.m. on Wednesday, March 15, 1995; that following the prayer, the Journal of proceedings be deemed approved to date, no resolutions come over under the rule, the call of the calendar be dispensed with, the morning hour be deemed to have expired, and the time for the two leaders reserved for their use later in the day. I further ask that the Senate then immediately resume consideration of H.R. 889, the supplemental appropriations bill, and at that point there be 1 hour for debate on the Kassebaum amendment, to be divided equally between Senators KASSEBAUM and KENNEDY.

The PRESIDING OFFICER. Without objection, it is so ordered.

PROGRAM

Mr. DOLE. For the information of all Senators, at 10:30 a.m. on tomorrow, Wednesday, two back-to-back votes will occur, the first being the cloture vote on the Kassebaum amendment, to be followed immediately by a vote on adoption of the unfunded mandates conference report, and following those two votes the Senate will resume consideration of the supplemental appropriations bill. Therefore, additional votes will occur and a late session can be anticipated.

ADJOURNMENT UNTIL 9:30 A.M. TOMORROW

Mr. DOLE. If there is no further business to come before the Senate, I now